PATENT

REMARKS

In this paper, claim 1 is currently amended. After entry of the above amendment, claims 1, 3-24 and 26 are pending, with claim 22 temporarily withdrawn from consideration, and claims 2 and 25 have been canceled.

The specification has been amended to provide proper antecedent basis for the first biasing location and the second biasing location recited in the claims.

Claims 1, 3-21, 23, 24 and 26 were rejected under 35 U.S.C. §102(b) as being anticipated by Hiura (US 6,508,341 B1). This basis for rejection is respectfully traversed.

Claim 1 has been amended to clarify that the biasing mechanism changes the location of the application of the biasing force from the first biasing location on the first engaging member to a different second biasing location on the first engaging member so that an engaging force applied between the first engaging member and the second engaging member when the biasing mechanism applies the biasing force to the second biasing location is less than the engaging force applied between the first engaging member and the second engaging member when the biasing mechanism applies the biasing force to the first biasing location.

Hiura discloses a parking brake device for a vehicle. In a first embodiment shown in Figs. 1-10, a latch pawl member (4) and a position changing member (5) are rotatably mounted around a support shaft spindle (9). Support shaft spindle (9) extends through an elongated slot (20) in latch pawl member (4) and through an elongated slot (26) in position changing member (5) so that both latch pawl member (4) and position changing member (5) can move in forward and reverse directions relative to support shaft spindle (9) in addition to rotation around support shaft spindle (9). A spring (6) has a stop portion (6b) that engages a spring catch (19) on latch pawl member (4), and a spring (7) has a stop portion (7b) that engages a spring catch (25) on position changing member (5). Position changing member (5) includes a pair of engaging portions (23) and (24) that engage latch pawl member (4) so that latch pawl member (4) and position changing member (5) rotate as a unit around support shaft spindle (9).

A brake pedal arm (2) is rotatably mounted to a pedal support pin (8), and an arcuate pawl teeth member (3) that includes a plurality of pawl teeth (12) is mounted along the edge of pedal arm (2). Latch pawl member (4) includes a pawl (15) that selectively engages pawl teeth (12), and position changing member (5) includes a pawl (22) that also selectively engages pawl teeth (12). Pawl (15) is disposed forwardly of pawl (22) when latch pawl member (4) and position changing member (5) are mounted to support shaft spindle (9).

In the brake off position shown in Fig. 1, spring catch (19) is disposed forwardly of reference line L_0. When spring catch (19) is located forwardly of a reference line L_0, spring (6) biases latch pawl member (4) in the clockwise direction. Spring (7) biases position changing member (5) clockwise. As a result, both latch pawl member (4) and position changing member (5) are biased clockwise so that pawl (15) of latch pawl member (4) rests on a non-toothed portion (14) of pawl teeth member (3), and pawl (22) of position changing member (5) is spaced apart from pawl teeth member (3).

When the driver presses pedal arm (2) clockwise to apply the parking brake, pawl (15) of latch pawl member (4) sequentially engages successive pawl teeth (12) as shown in Fig. 3. As a result, when the driver removes his or her foot from pedal arm (2), pedal arm (2) rotates slightly counterclockwise as shown in Fig. 4, and the pawl tooth (12) currently engaged by pawl (15) of latch pawl member (4) pushes latch pawl member (4) rearwardly relative to support shaft spindle (9). This rearward movement of latch pawl member (4) causes spring catch (19) of latch pawl member (4) to move rearwardly relative to reference line L_0. When spring catch (19) is located behind reference line L_0, spring (6) biases latch pawl member (4) in the counterclockwise direction. However, the engagement between pawl (15) and the currently engaged pawl tooth (12) prevents latch pawl member (4) and position changing member (5) from rotating counterclockwise. At no time during this operation of the parking brake does either spring (6) or spring (7) change the location of the application of the biasing force from a first biasing location to a different second biasing location on latch pawl member (4) or position changing member (5), respectively.

When the driver wants to release the parking brake, the driver presses pedal arm (2) slightly clockwise as shown in Fig. 5. This clockwise movement allows pawl (15) to disengage from pawl

teeth (12), thereby allowing latch pawl member (4) and position changing member (5) to rotate counterclockwise as a result of the biasing force provided by spring (6). As a result, pedal arm (2) is allowed to rotate to the brake off position when the rider removes his or her foot from pedal arm (2), while pawl (22) of position changing member (5) merely rides along the tips of pawl teeth (12) as shown in Fig. 6. At no time during this operation does either spring (6) or spring (7) change the location of the application of the biasing force from a first biasing location to a different second biasing location on latch pawl member (4) or position changing member (5), respectively.

When the driver wants to increase a previously applied braking force, the driver presses pedal arm (2) further clockwise from the previously set braking position as shown in Fig. 7. As with the brake release operation, this clockwise movement allows paw (15) of latch pawl member (4) to disengage from pawl teeth (12), thereby allowing latch pawl member (4) and position changing member (5) to rotate counterclockwise as a result of the biasing force provided by spring (6). This time, pawl (22) of position changing member (5) engages pawl teeth (12), so pawl teeth (12) push latch pawl member (4) and position changing member (5) forwardly. This forward movement causes spring catch (19) of latch pawl member (4) to move forwardly relative to reference line L_0. As noted above, when spring catch (19) is located in front of reference line L_0, spring (6) biases latch pawl member (4) in the clockwise direction. As a result, latch pawl member (4) and position changing member (5) rotate clockwise, and pawl (15) on latch pawl member (4) engages pawl teeth (12) as shown in Fig. 8. The driver then presses pedal arm (2) further clockwise to the desired position as shown in Fig. 9. When the driver removes his or her foot from pedal arm (2), pedal arm (2) rotates slightly counterclockwise, and the pawl tooth (12) currently engaged by pawl (15) pushes latch pawl member (4) rearwardly relative to support shaft spindle (9) as shown in Fig. 10. As with the initial brake application, this rearward movement causes spring catch (19) to move rearwardly relative to reference line L_0, and spring (6) biases latch pawl member (4) in the counterclockwise direction. However, the engagement between pawl (15) and the currently engaged pawl tooth (12) prevents latch pawl member (4) and position changing member (5) from rotating counterclockwise. At no time during this operation does either spring (6) or spring (7) change the location of the application of the biasing force from a first biasing location to a different second biasing location on latch pawl member (4) or position changing member (5), respectively.

In a second embodiment shown in Figs. 11-17, a latch pawl member (44) and a position changing member (45) are rotatably mounted around a support shaft spindle (49) that is mounted to a brake pedal arm (42), wherein brake pedal arm (2) is rotatably mounted to a pedal support pin (48) fixed to a stationary mounting bracket (41). Support shaft spindle (49) extends through an elongated slot (60) in latch pawl member (44) and through an elongated slot (66) in position changing member (45) so that both latch pawl member (44) and position changing member (45) can move in forward and reverse directions relative to support shaft spindle (49) in addition to rotation around support shaft spindle (49). A spring (46) has an action end (46a) that engages a spring catch (59) on latch pawl member (44), and a spring (47) has an end portion that engages a spring catch (65) on position changing member (45). Position changing member (45) includes an engaging portion (64) that engages latch pawl member (44) so that latch pawl member (44) and position changing member (45) can rotate as a unit around support shaft spindle (49).

An arcuate pawl teeth member (43) that includes a plurality of pawl teeth (52) is mounted to mounting bracket (41). Latch pawl member (44) includes a pawl (55) that selectively engages pawl teeth (52), and position changing member (45) includes a pair of pawls (62) and (63) that also selectively engage pawl teeth (52). Pawl (55) is disposed forwardly of pawls (62) and (63) when latch pawl member (44) and position changing member (45) are mounted to support shaft spindle (49).

In the brake off position shown in Fig. 11, spring catch (59) is disposed forwardly of reference line L_0, so spring (46) biases latch pawl member (44) in the counterclockwise direction. Spring (47) biases position changing member (45) in the counterclockwise direction. As a result, both latch pawl member (44) and position changing member (45) are biased counterclockwise so that pawl (55) of latch pawl member (44) rests on a non-toothed portion (54) of pawl teeth member (43), and pawls (62) and (63) of position changing member (45) are spaced apart from pawl teeth member (43).

When the driver presses pedal arm (42) clockwise to apply the parking brake, support shaft spindle (49) pulls latch pawl member (44) and position changing member (45) along with pedal arm (42), and pawl (55) of latch pawl member (44) sequentially engages successive pawl teeth (52).

When the driver removes his or her foot from pedal arm (42), pedal arm (42) rotates slightly counterclockwise until support shaft spindle (49) contacts the forward edge of slot (60) in latch pawl member (44) as shown in Fig. 12, and spring catch (59) is located behind reference line L_0. When spring catch (59) is located behind reference line L_0, spring (46) biases latch pawl member (44) in the clockwise direction. However, the engagement between pawl (55) and the currently engaged pawl tooth (52) prevents latch pawl member (44) and position changing member (45) from rotating clockwise. At no time during this operation does either spring (46) or spring (47) change the location of the application of the biasing force from a first biasing location to a different second biasing location on latch pawl member (44) or position changing member (45), respectively.

When the driver wants to release the parking brake, the driver presses pedal arm (42) slightly clockwise. This clockwise movement allows pawl (55) to disengage from pawl teeth (52), thereby allowing latch pawl member (44) and position changing member (45) to rotate clockwise because of the biasing force provided by spring (46). As a result, pedal arm (42) is allowed to rotate to the brake off position when the rider removes his or her foot from pedal arm (42), while pawls (62) and (63) of position changing member (45) merely ride along the tips of pawl teeth (52). As pedal arm (42) nears the end of its travel, a sliding contact engaging portion (56) of latch pawl member (44) engages a guide portion (53) of mounting bracket (41) as shown in Fig. 14, thereby rotating latch pawl member (44) and position changing member (45) counterclockwise to the brake off position shown in Fig. 11. At no time during this operation does either spring (46) or spring (47) change the location of the application of the biasing force from a first biasing location to a different second biasing location on latch pawl member (44) or position changing member (45), respectively.

When the driver wants to increase a previously applied braking force, the driver presses pedal arm (42) further clockwise from the previously set braking position as shown in Fig. 15. Support shaft spindle (49) again contacts the forward edge of slot (60) in latch pawl member (44), thereby causing spring catch (59) to move rearwardly relative to reference line L_0 so that spring (46) biases latch pawl member (44) in the clockwise direction. This time, support shaft spindle (49) also causes latch pawl member (44) to move relative to position changing member (45), and engaging portion (64) on position changing member (45) presses against a guide portion (58) of latch pawl member (44). As a result, latch pawl member (44) rotates counterclockwise because of the biasing

force of spring (46), position changing member (45) rotates clockwise as a result of the engagement between guide portion (58) of latch pawl member (44) and engaging portion (64) of position changing member (45), and pawls (55), (62) and (63) engage pawl teeth (52). When the driver removes his or her foot from pedal arm (42), pedal arm (42) rotates slightly counterclockwise until support shaft spindle (49) contacts the rear edge of slot (60), position changing member (45) rotates counterclockwise to disengage pawls (62) and (63) from pawl teeth (52), and pedal arm (42) is maintained in the new position by the engagement between pawl (55) and pawl teeth (52). At no time during this operation does either spring (46) or spring (47) change the location of the application of the biasing force from a first biasing location to a different second biasing location on latch pawl member (44) or position changing member (45), respectively.

Thus, Hiura neither discloses nor suggests the subject matter recited in claim 1. As for the remaining dependent claims, Hiura neither discloses nor suggests the subject matter recited in those claims alone or in combination with claim 1.

Claims 1, 3-21, 23, 24 and 26 were rejected under 35 U.S.C. §103(a) as being unpatentable over Hiura. This basis for rejection is respectfully traversed for the same reasons noted above.

Furthermore, while one *could* apply different biasing forces to Hiura's latch pawl members (4, 44) and position changing members (5, 45), there is no reason why one of ordinary skill in the art would do so by *changing the location* of the application of a biasing force from a first biasing location on the first engaging member to a different second biasing location on the first engaging member as recited in claim 1.

Claims 1, 3-7 and 26 were rejected under 35 U.S.C. §102(b) as being anticipated by Liu, et al (US 6,497,163 B2). This basis for rejection is respectfully traversed.

Liu, et al discloses a dual-rod speed change control device comprising a base (10), a wire hub seat (20), an advancing member (30), and a withdrawing member (40). Wire hub seat (20) slides linearly on base (10) and connects to a cable end bead of a guide wire (A). Wire hub seat (20) includes an upper plate (21) and a lower plate (22), wherein upper plate (21) includes a plurality of

ratchet teeth (27) on one side, and lower plate (22) includes a plurality of ratchet teeth (25) along one side and a plurality of ratchet teeth (26) on an opposite side.

Advancing member (30) comprises an advancing dial rod (32) that rotatably supports an advancing pawl (35), wherein advancing pawl (35) is biased counterclockwise by a torsion spring (36). Advancing dial rod (32) is biased in a clockwise direction by a spring (33). Advancing pawl (35) engages selected ones of the plurality of ratchet teeth (25) on lower plate (22) of wire hub seat (20) when advancing dial rod (32) is rotated counterclockwise, thereby moving wire hub seat (20) to pull guide wire (A).

Withdrawing member (40) comprises a locating ratchet pawl (42) and a withdrawing dial rod (45). Locating ratchet pawl (42) is pivotably mounted to base (10) and is biased on a clockwise direction by a spring (43). Locating ratchet pawl (42) engages selected ones of the plurality of ratchet teeth (27) on upper plate (21) of wire hub seat (20) to retain wire hub seat (20) in a selected position. Withdrawing dial rod (45) includes a push portion (451) and a retaining portion (452), wherein retaining portion (452) engages selected ones of the plurality of ratchet teeth (26) on lower plate (22) of wire hub seat (20). Withdrawing dial rod (45) is biased in a counterclockwise direction by a spring (46). When withdrawing dial rod (45) is rotated clockwise, push portion (451) disengages locating ratchet pawl (42) from ratchet teeth (27), and retaining portion (452) engages one of the plurality of ratchet teeth (26) on lower plate (22) of wire hub seat (20). At that time, wire hub seat (20) moves to slightly release guide wire (A). When withdrawing dial rod (45) is rotated in the counterclockwise direction back to the home position, retaining portion (452) disengages from ratchet teeth (26) on lower plate (22) of wire hub seat (20), and locating ratchet pawl (42) again engages with one of the plurality of ratchet teeth (27) on upper plate (21) of wire hub seat (20). At that time, wire hub seat (20) moves to complete the releasing of guide wire (A).

The office action interprets advancing pawl (35) to be a first engaging member, and the office action interprets lower plate (22) of wire hub seat (20) to be a second engaging member. However, first engaging member (35) is disengaged from second engaging member (22) in the position shown in Fig. 3 cited by the examiner, so Liu, et al does not show "a biasing mechanism that applies a biasing force to the first engaging member at a first biasing location on the first

engaging member so that the first engaging member *engages* the second engaging member" as recited in claim 1. Furthermore, Liu, et al neither discloses nor suggests changing a location of the application of the biasing force from a first biasing location on the first engaging member (35) to a different second biasing location on first engaging member (35). Thus, Liu, et al neither discloses nor suggests the subject matter recited in claim 1. As for the remaining dependent claims, Liu, et al neither discloses nor suggests the subject matter recited in those claims alone or in combination with claim 1.

Claims 1, 3-7 and 26 were rejected under 35 U.S.C. §103(a) as being unpatentable over Liu, et al. This basis for rejection is respectfully traversed for the same reasons noted above.

Furthermore, while one *could* apply different biasing forces to Liu, et al's advancing pawl (35), there is no reason why one of ordinary skill in the art would do so by *changing the location* of the application of a biasing force from a first biasing location on the first engaging member to a different second biasing location on the first engaging member as recited in claim 1.

Accordingly, it is believed that the rejections under 35 U.S.C. §102 and §103 have been overcome by the foregoing amendment and remarks, and it is submitted that the claims are in condition for allowance. Reconsideration of this application as amended is respectfully requested. Allowance of all claims is earnestly solicited.

Respectfully submitted,

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